

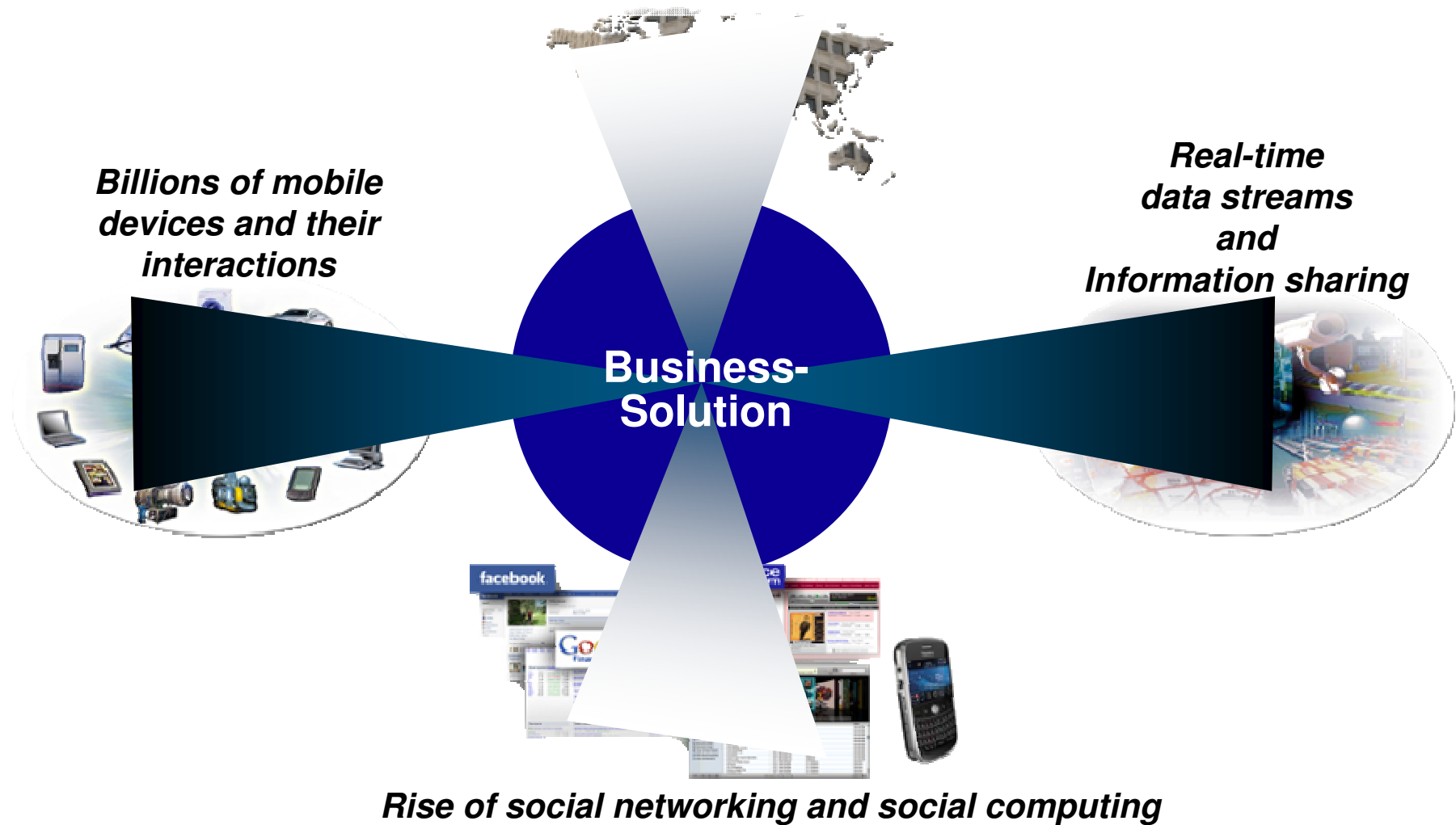
Mobile Computing with z/VSE applications



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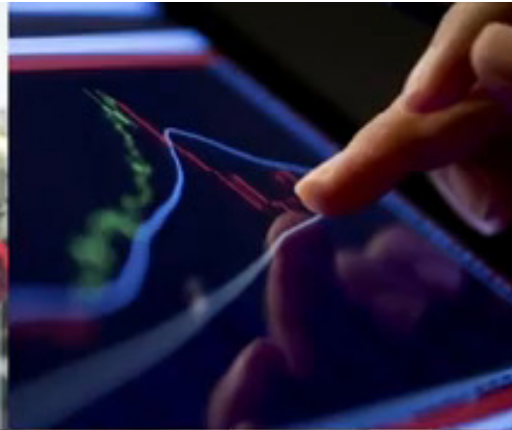
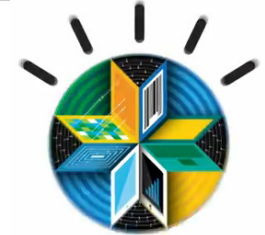


Globalization and Globally Available Resources





Deepest and Most Rapid Transformation Today



Global machine-to-machine connections will increase from

2 billion in 2011 to

18 billion in 2022.

<http://www.youtube.com/watch?v=sHQe4FsJ0X4>



Mobile First



- Mobile devices are emerging as **primary design point** for end-user access to IT
- More than a new access point to view existing back-end systems
- Mobile First is about: Behavior like consumer applications
 - constantly connected clients
 - quickly accomplishing single tasks and then move on
- **Is accelerating the integration of cloud, social, and analytics**

http://www.b2match.eu/system/softwaredays2013/files/Global-Technology-Outlook-2013_IBM.pdf?1366628169

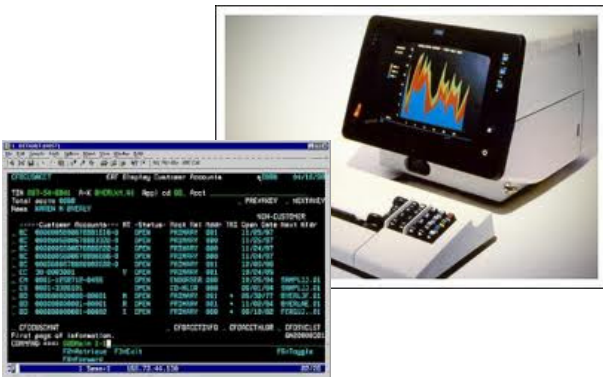


Mobile is changing the way information is used

Information developed and controlled by users for mobile devices

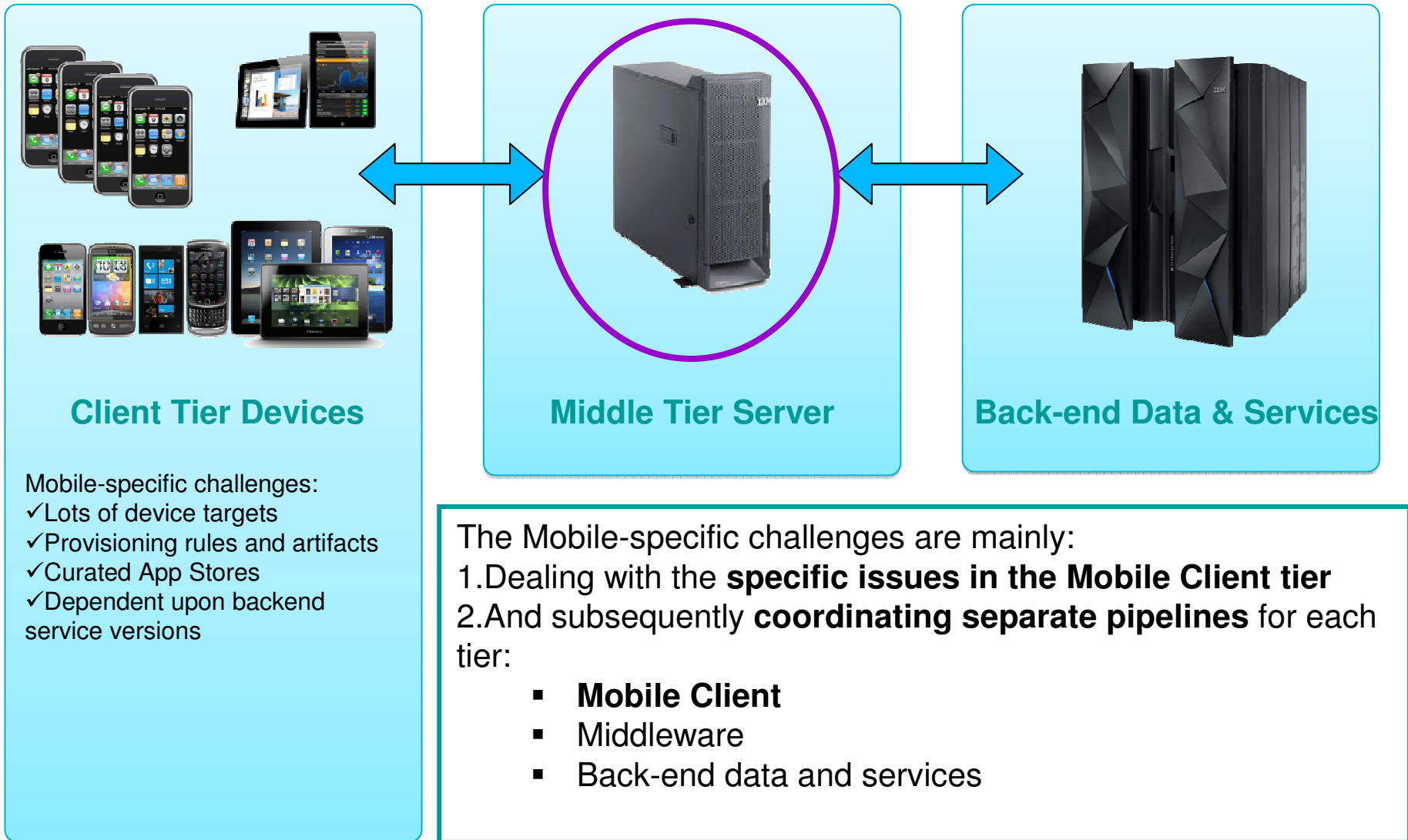
Information developed using multiple platforms and transformed into web services

Information restricted and developed in the data center



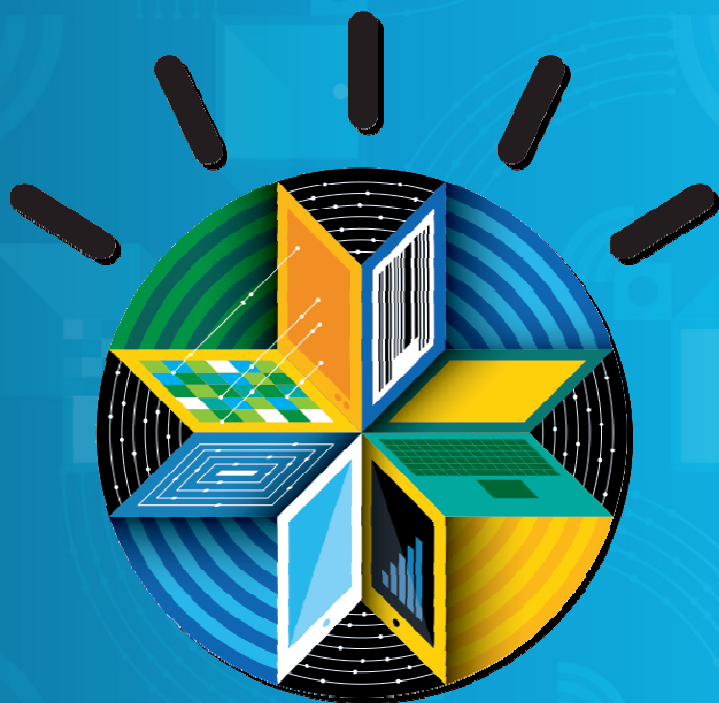


Multi-tier Mobile Apps - Specific Challenges



IBM MobileFirst

02-2013



The Broadest Portfolio of Mobile Solutions

IBM MobileFirst Platform ←

IBM Worklight

IBM Rational Test Workbench

IBM Mobile Application Platform Management

IBM MobileFirst Management

IBM MobileFirst Security

IBM MobileFirst Analytics



IBM Worklight – Support for Different Mobile Application Styles



Web

- HTML, JavaScript, CSS
- Accessed from a mobile web browser
- No device-specific capabilities



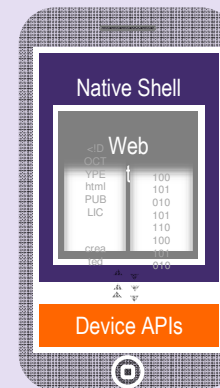
Mobile Web

- HTML, JavaScript, CSS
- Accessed from a mobile web browser; mobile-optimized UI
- Limited access to lower-level device capabilities



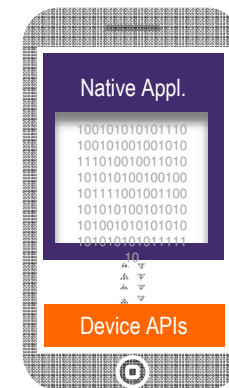
Hybrid Mobile

- HTML, JavaScript, CSS, with optional native code
- Installed and run like a native mobile app; mobile-optimized UI
- Access to lower-level device capabilities



Native

- Native code
- Access to full set of lower-level device capabilities



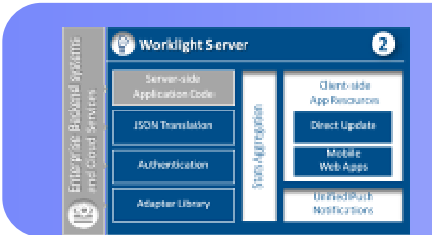


IBM Worklight - Components



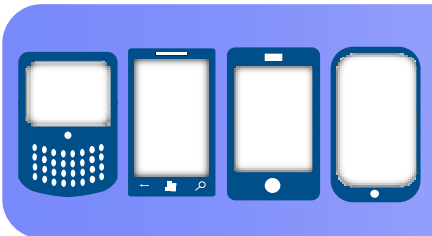
Worklight Studio

The most complete, extensible development environment
maximum code reuse and per-device optimization



Worklight Server

Mobile middleware offering unified push notifications,
version management, security and integration



Worklight Runtime Components

Extensive libraries and client APIs that expose and interface
with native device functionality and the Worklight Server



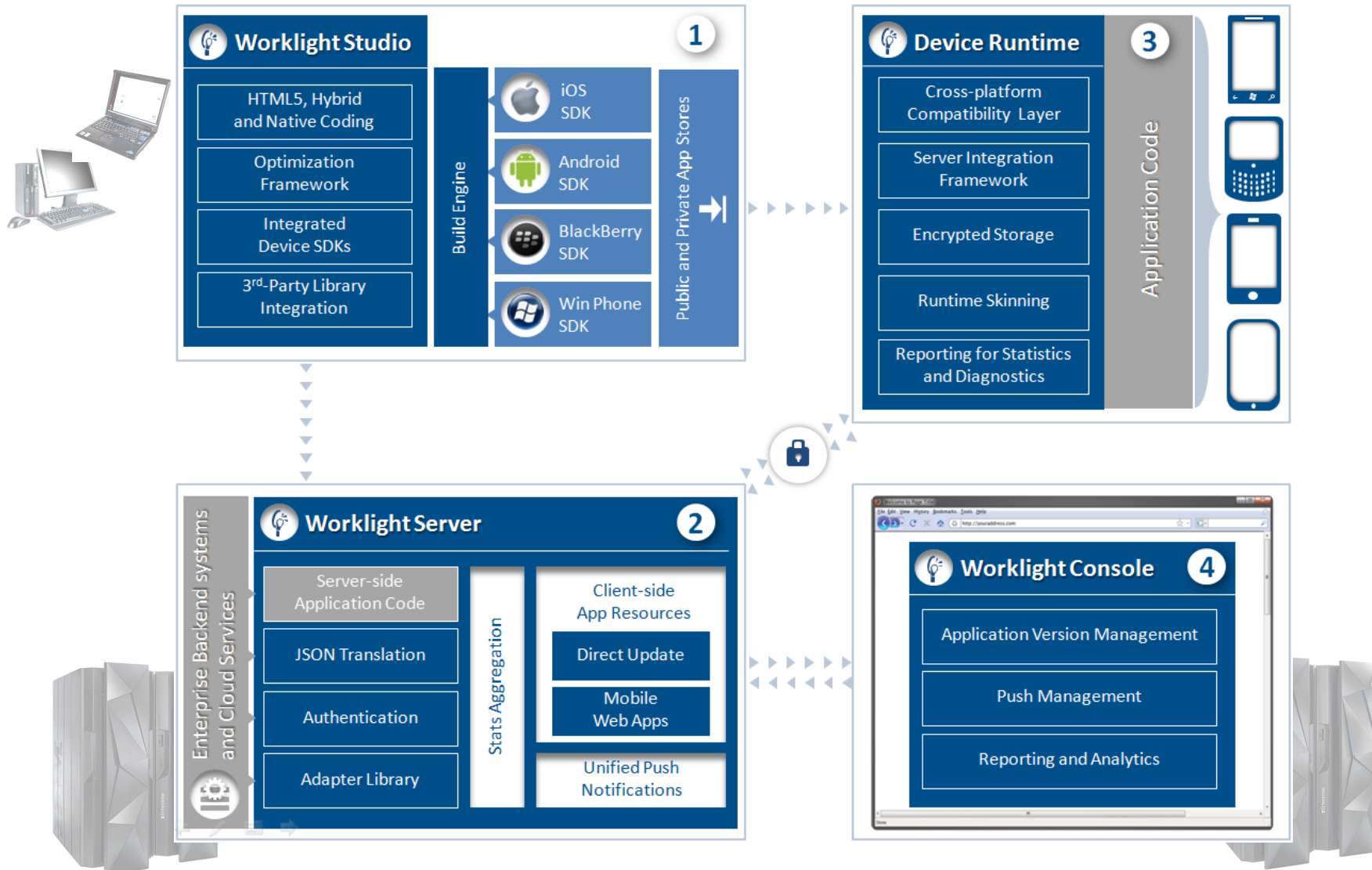
Worklight Console

A web-based console for real-time analytics and control
of your mobile apps and infrastructure



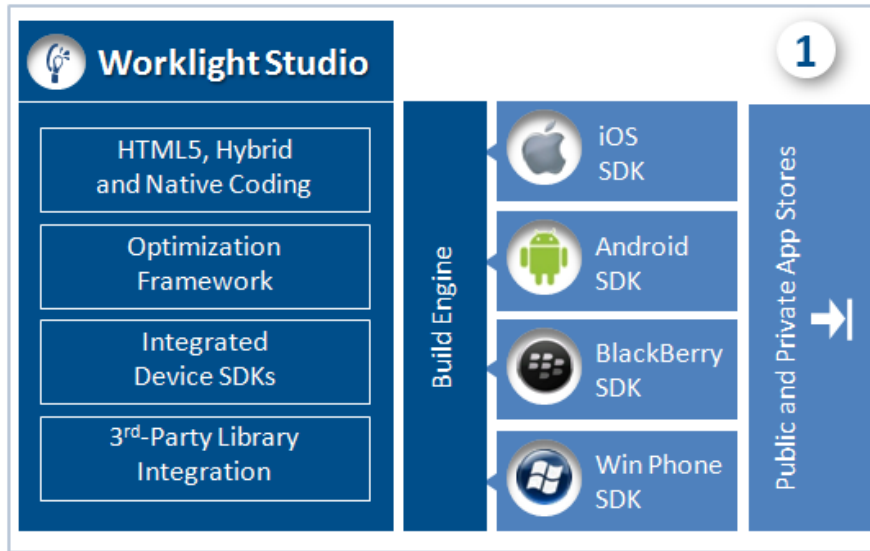


Architecture Overview

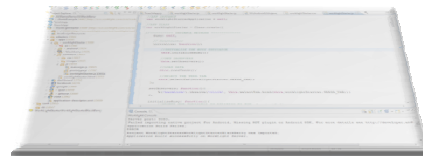
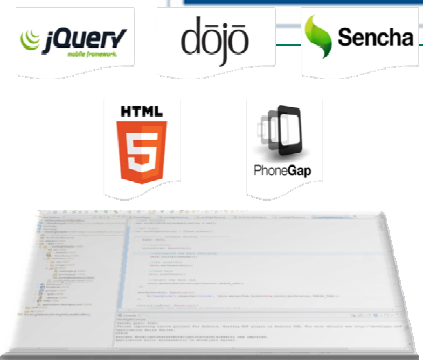
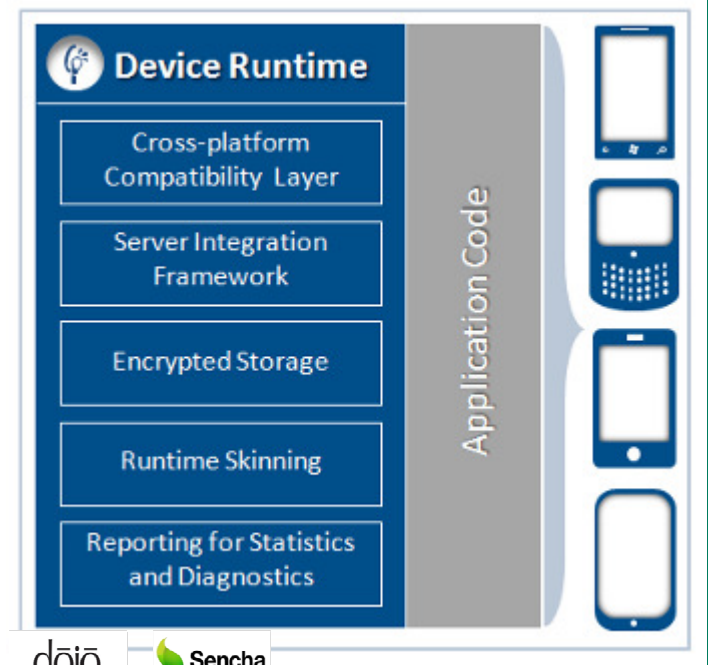




IBM Worklight Studio & Device Runtime

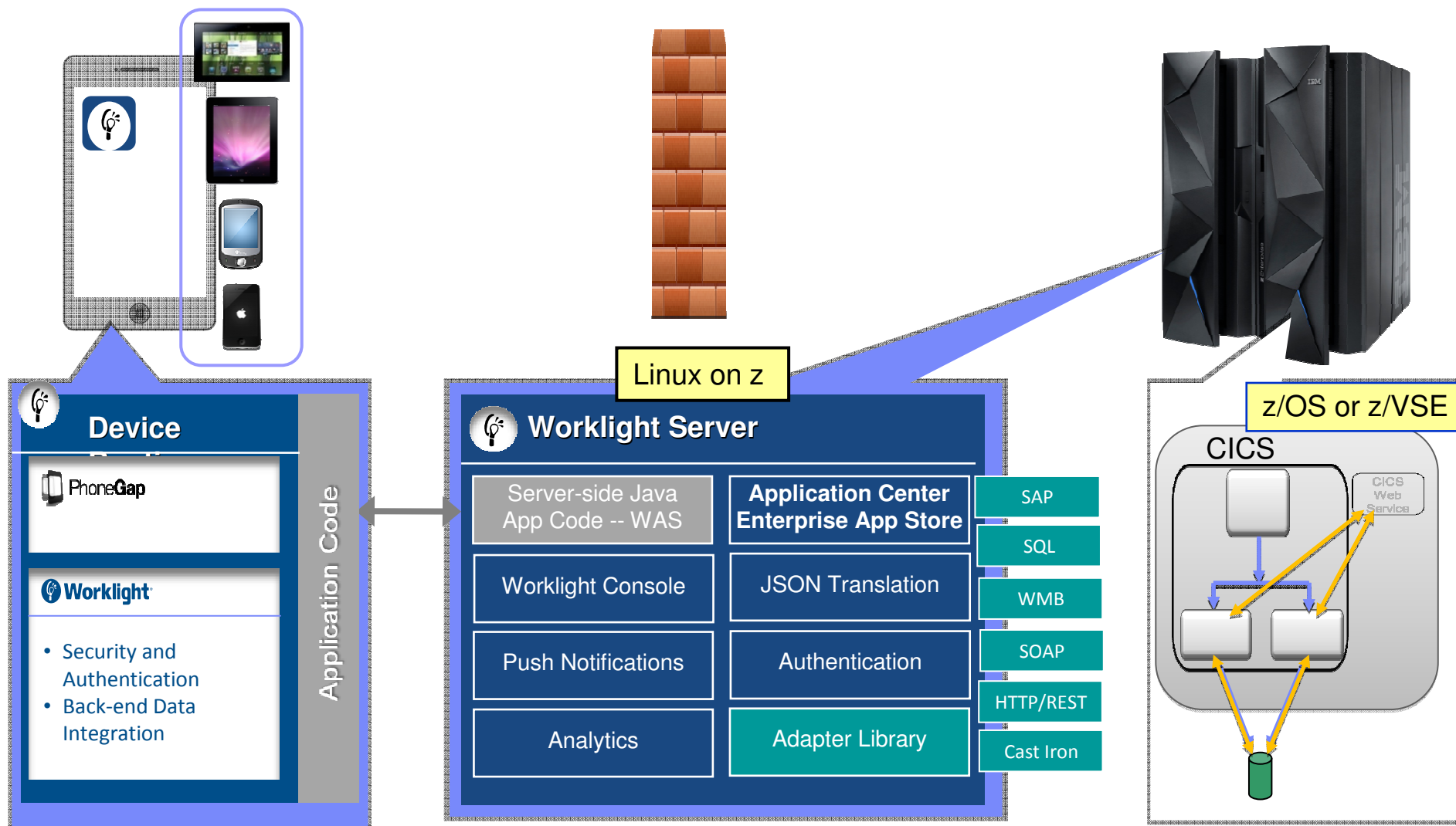


Eclipse based mobile **Integrated Development Environment (IDE)**





IBM Worklight Server - Architecture on Linux on System z

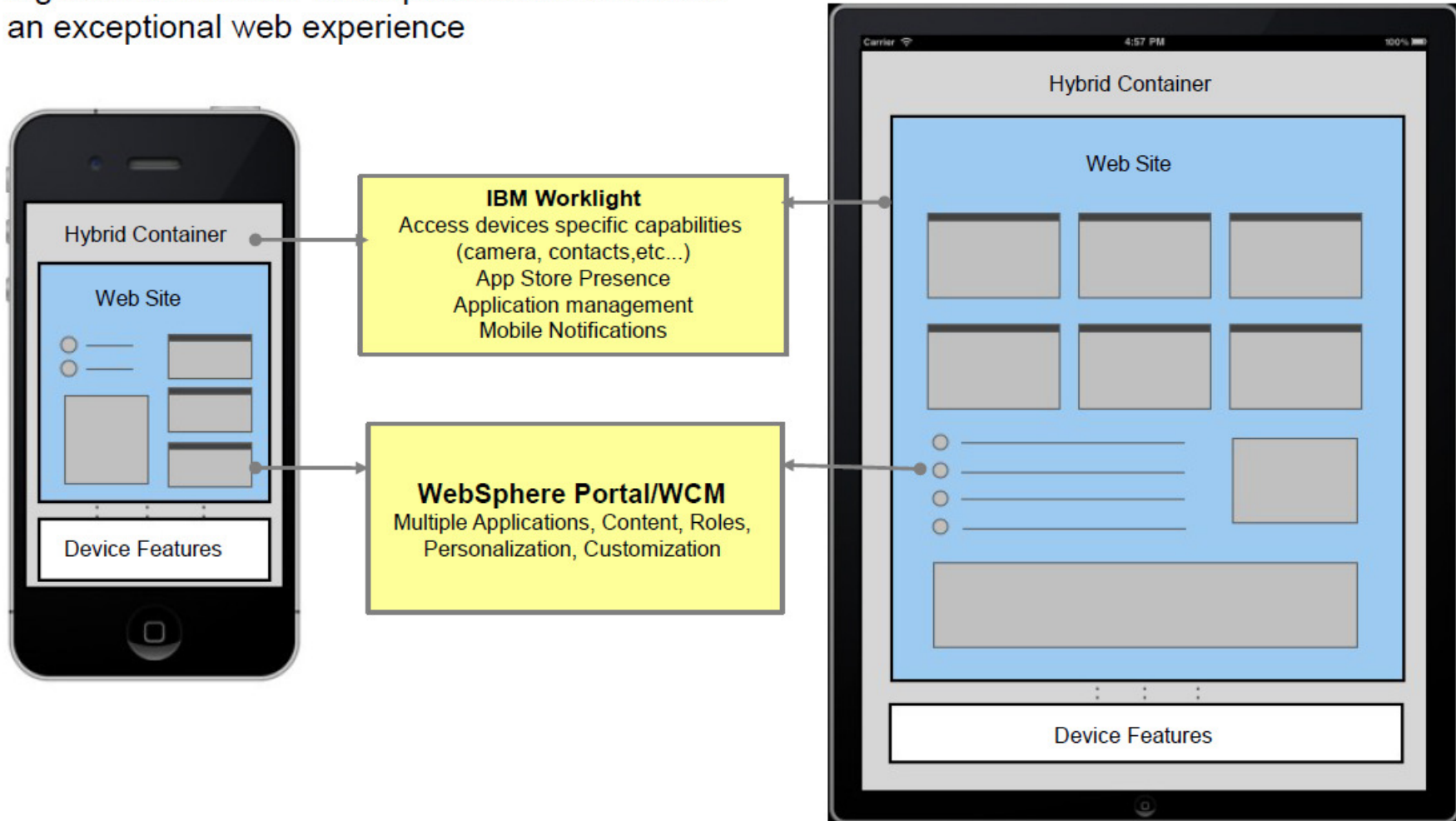


Worklight Video: http://www.youtube.com/watch?feature=player_embedded&v=zHnFw70XXXo



Hybrid – Worklight and WebSphere Portal together

WebSphere Portal/WCM and IBM Worklight used together can extend the capabilities and reach of an exceptional web experience



WCM = Web Content Manager



WebSphere Portal and Worklight

- **A website** aggregates:
 - web content
 - multiple web applications into a single user interface
 - works across multiple channels, including desktop browser, smartphones and tablets

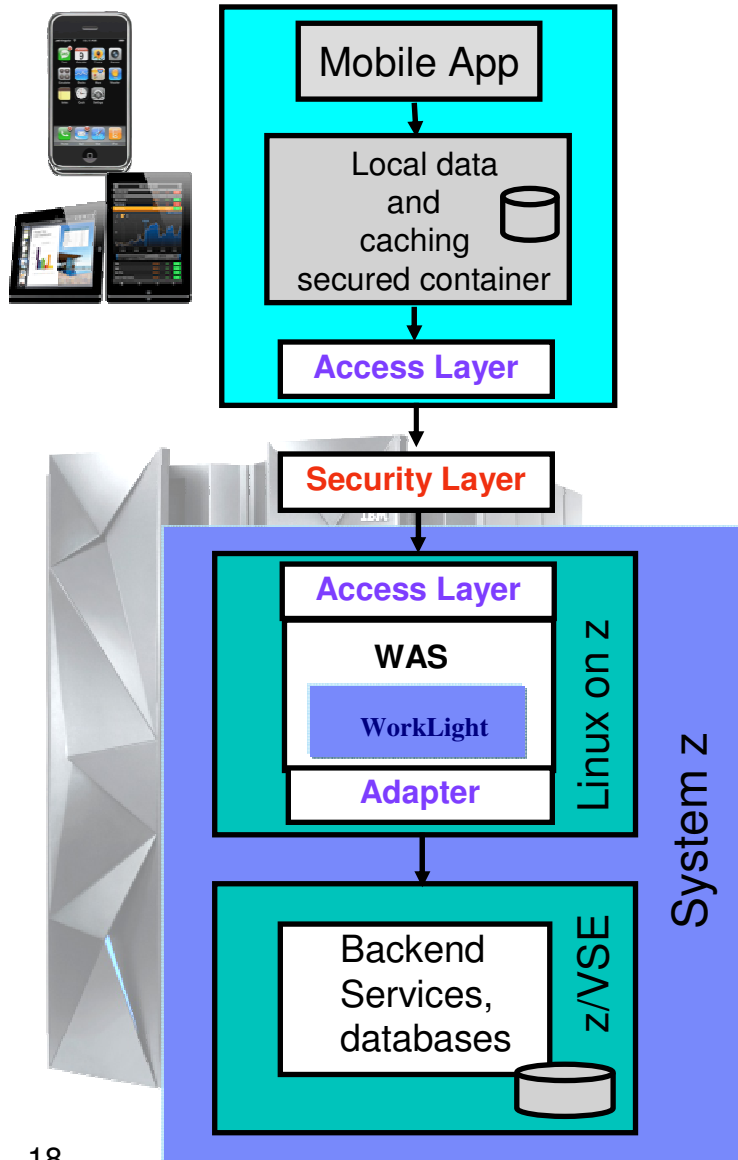
A simple example might be an airline's website
They probably have a mobile website, too, for smartphones and tablets.

- **WebSphere Portal is the right platform for serving a personalized multi application website.**
- **A web application** is custom-built and often targets specific tasks.
 - For example, your favorite airline app from an app store that lets you:
 - book a flight or
 - reserve a seat
 - It usually contains a subset of the website's features, targeted to what you can practically do on the device.
- **IBM Worklight provides the ability to create both native and hybrid applications**

You can use either WebSphere Application Server as the back end (if you are creating hybrid apps), or WebSphere Portal as the backend (if you are creating hybrid websites).



Implementation layers for a mobile environment on System z



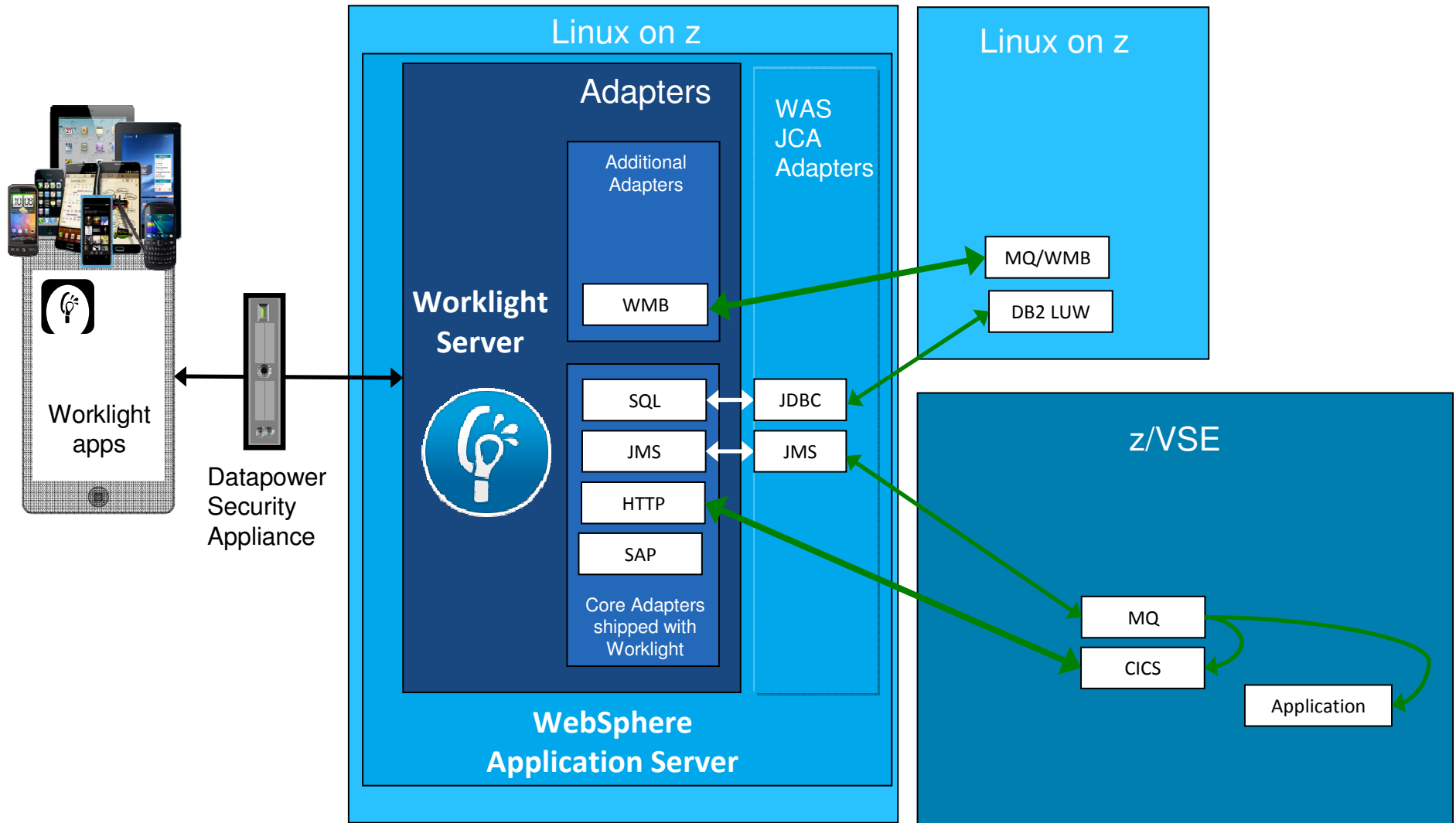
- **The Mobile App** running on a mobile device connects to the Worklight Mobile Environment using different protocols in the Access Layer.
- The local data and caching mechanism is encrypted
- The access to the System z Mobile Environment is done via a Security Layer for Authentication.

- **The Mobile environment** on System z can use different protocols in the Access Layer.
- The Worklight Server runs in a WebSphere Environment, taking advantage of the WAS technologies.
- The Adapters enable the communication with transactional services and databases.

- **The back-end services** on System z (i.e. z/VSE, z/OS), can be accessed from the mobile environment using the internal network.

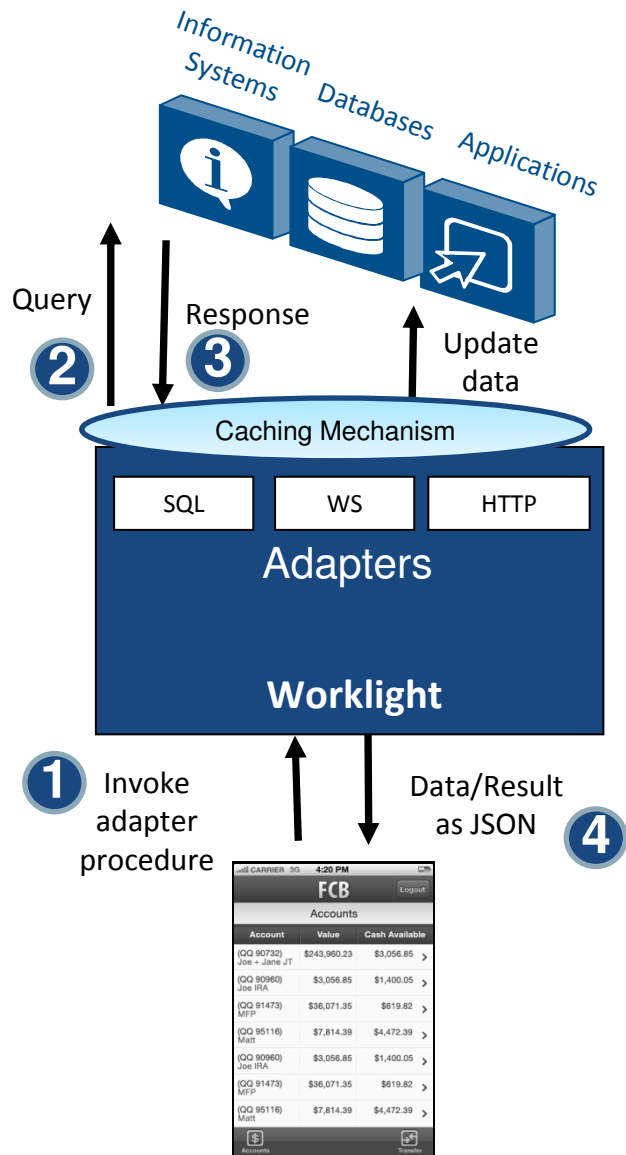


Implementation option of a Mobile environment on System z - Functional diagram with WAS and Worklight Adapters





Worklight Server- Adapters



Universality

- Supports multiple integration technologies and back-end information systems

Read-only & Transactional Capabilities

- Adapters support read-only and transactional access modes to back-end systems

Security

- Flexible authentication APIs for back-end connections
- Connected user identity control

Caching

- Leveraged to store data retrieved from back-end

Transparency

- Uniform exposure of back-end data for all adapter types

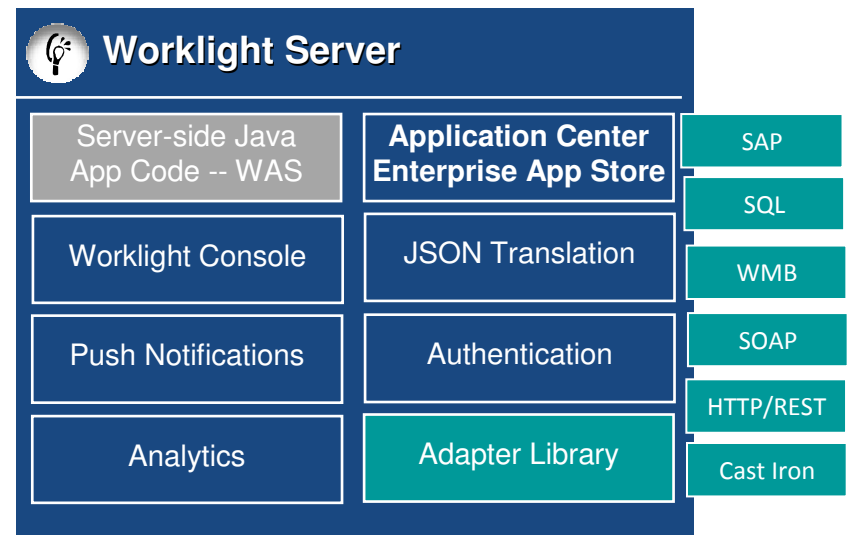
Fast Development

- Defined using simple XML syntax
- Easily configured with JavaScript APIs



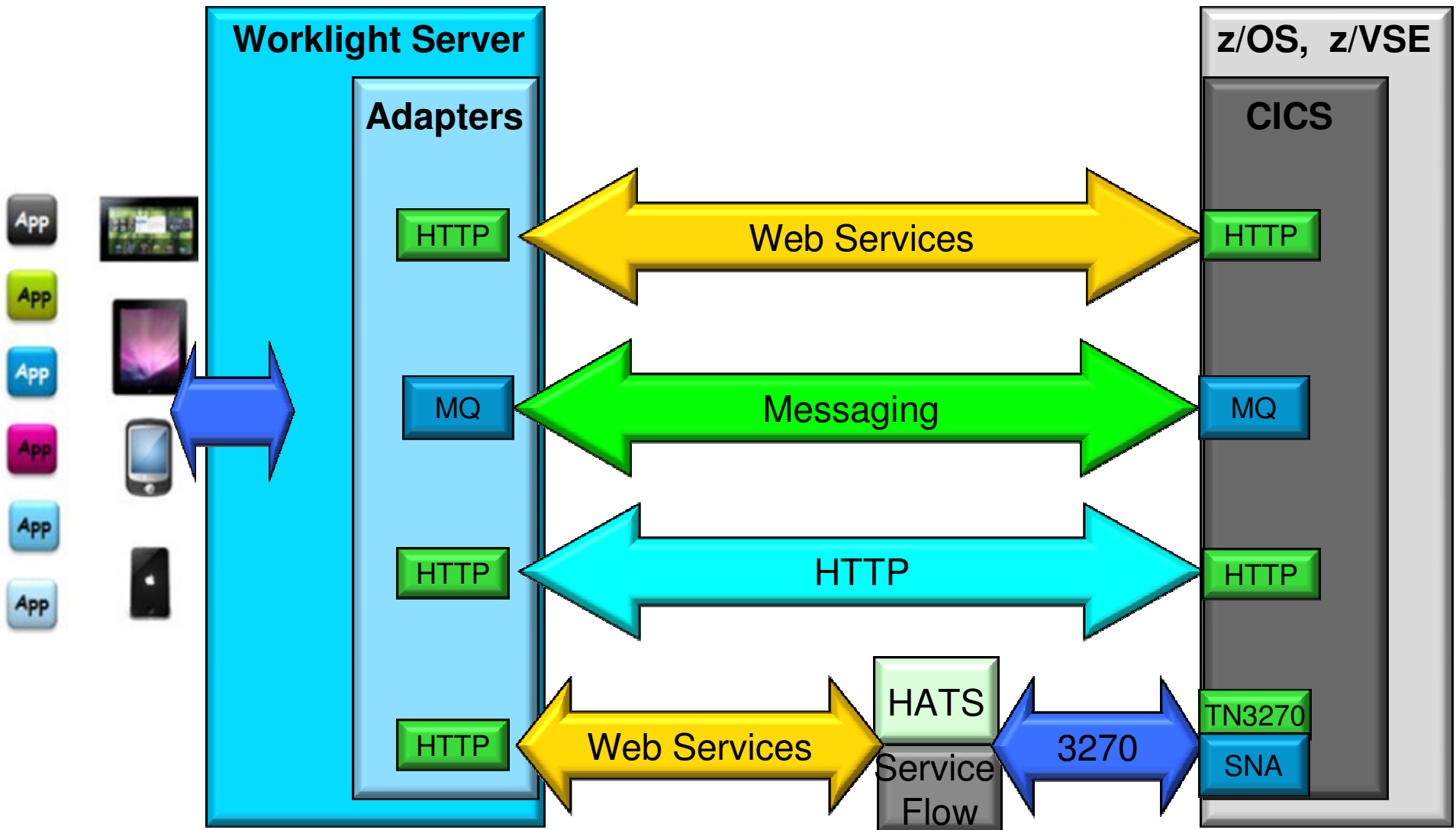
Worklight Studio - developing adapters

- An Adapter is a transport layer used by the Worklight Platform to connect to various back-end systems.
 - Executed on Worklight server
 - Implemented in JavaScript by default
 - Can be custom-coded in Java
 - Simple client-side JavaScript invocation model through Worklight client API
- Adapters are used for:
 - Retrieving information
 - Performing actions
- Out of the box Adapter support:
 - HTTP Adapter (supports both REST and SOAP)
 - You can use the HTTP adapter to send GET, POST, PUT, and DELETE HTTP requests and retrieve data from the response body. Data in the response can arrive in XML, HTML, or JSON formats. JSON (JavaScript Object Notation) is the newest format developed for mobile communications.
 - Messaging (WMB, MQTT)
 - SQL Adapter



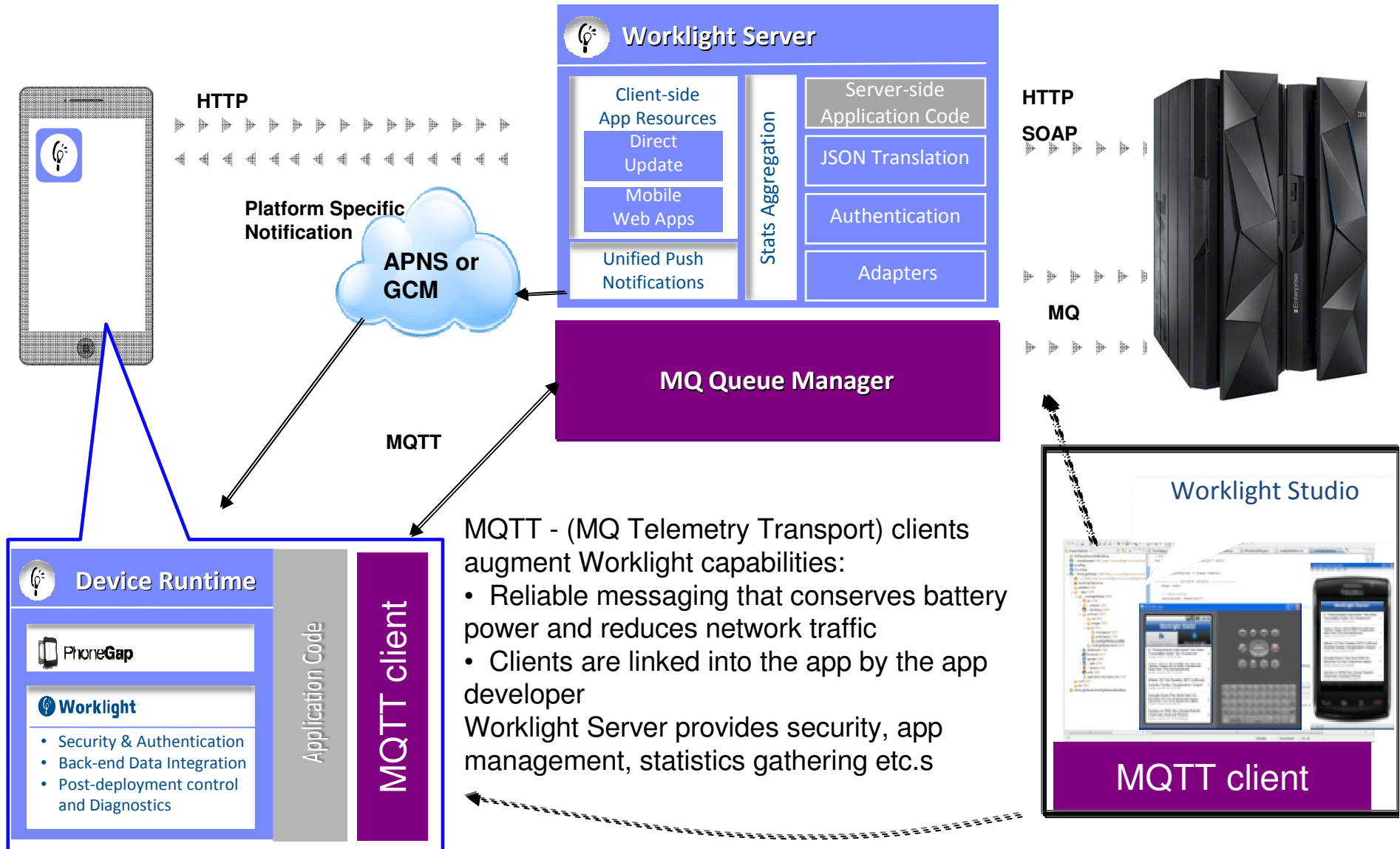


CICS Connectivity Options with Worklight





Lightweight MQ for Key Enterprise Messaging (MQTT)





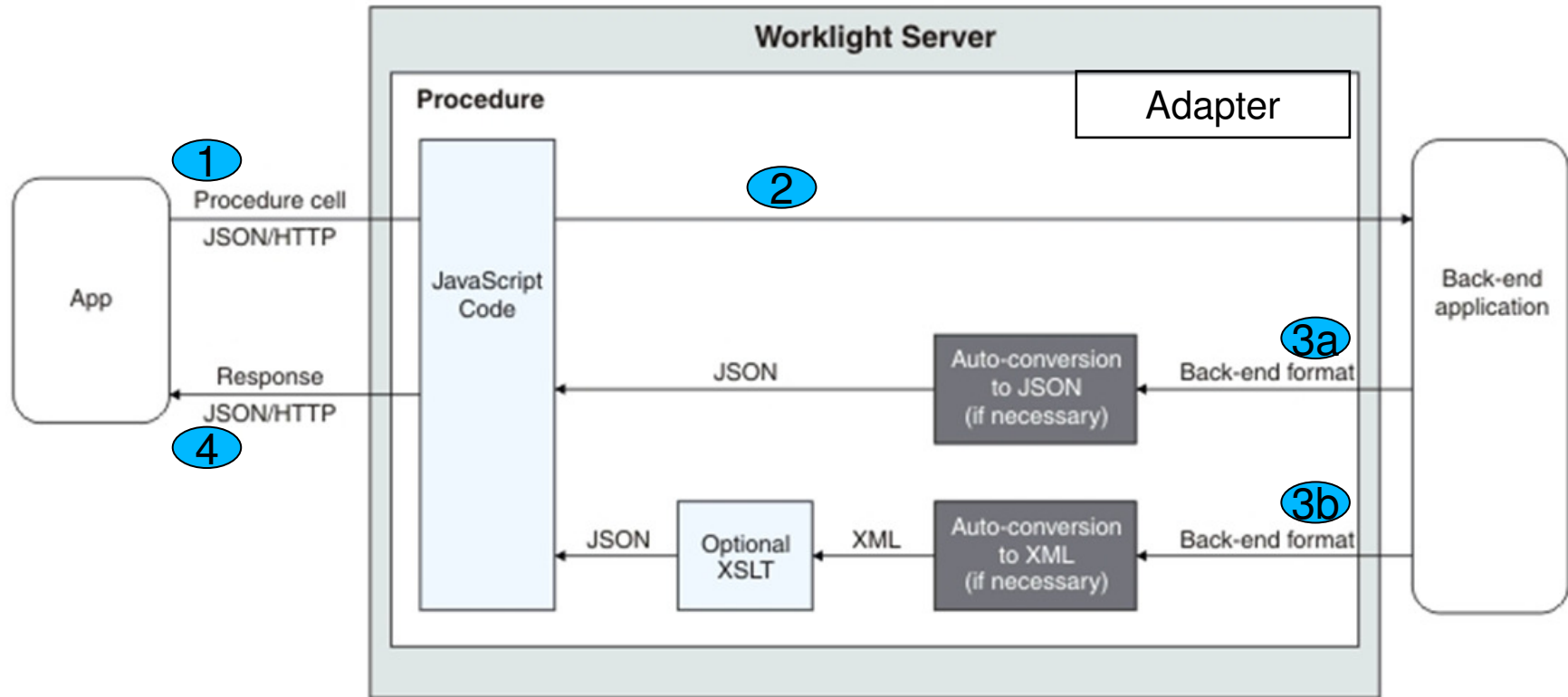
JSON – JavaScript Object Notation

<http://en.wikipedia.org/wiki/JSON>-6-2013

- **JavaScript Object Notation (JSON)** - Human-readable data interchange
- Open standard - derived from the JavaScript for representing simple data structures
- Used together with JavaScript on Demand (JOD), Ajax or WebSockets for transmission of data between client and server



Worklight Adapters



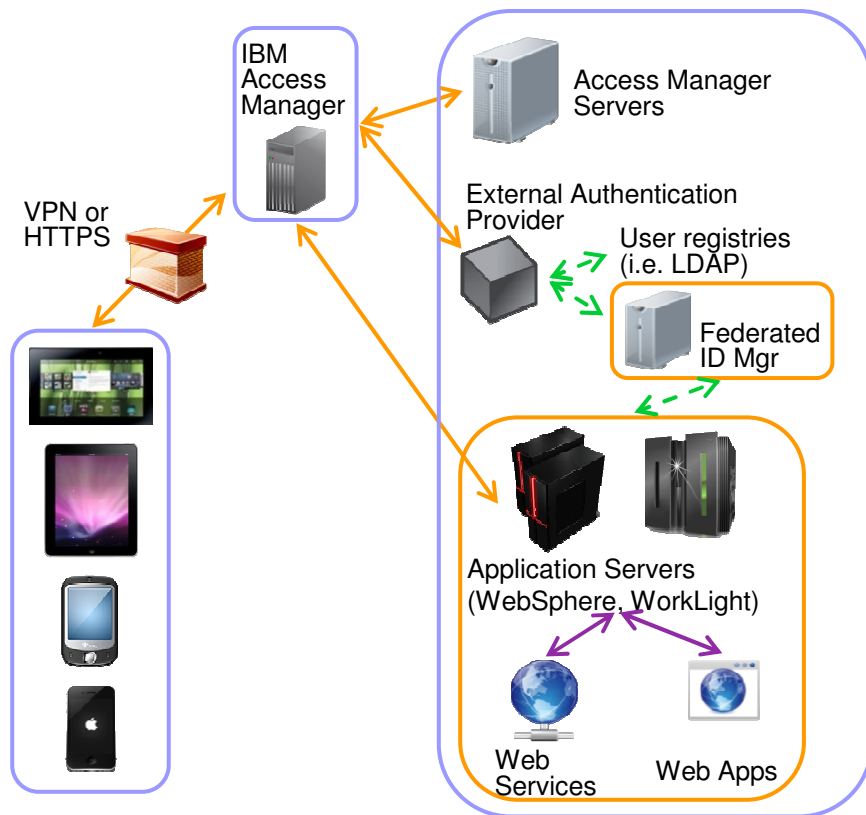
1. An adapter exposes a set of services, called procedures. Mobile apps invoke procedures by issuing Ajax requests.
2. The procedure retrieves information from the back-end application.
3. The back-end application then returns data in some format.
 - a. If this format is JSON, the IBM Worklight Server keeps the data intact.
 - b. If this format is not JSON, the IBM Worklight Server automatically converts it to JSON. Alternatively, the developer can provide an XSL transformation to convert the data to JSON..
4. The JavaScript implementation of the procedure receives the JSON data, performs any additional processing, and returns it to the calling app

http://pic.dhe.ibm.com/infocenter/wrklght/v5r0m5/index.jsp?topic=%2Fcom.ibm.worklight.help.doc%2Fdevref%2Fc_overview_of_ibm_worklight_adap.html



Mobile Access Security

IBM Security Access Manager for Cloud and Mobile extends user access protection to mobile and cloud environments using federated SSO, authenticating and authorizing the user and their device



[Tivoli Federated Identity Manager](#)
[Tivoli Security Policy Manager](#)

Client Challenge

Ensuring users and devices are authorized to access enterprise resources from that specific device.

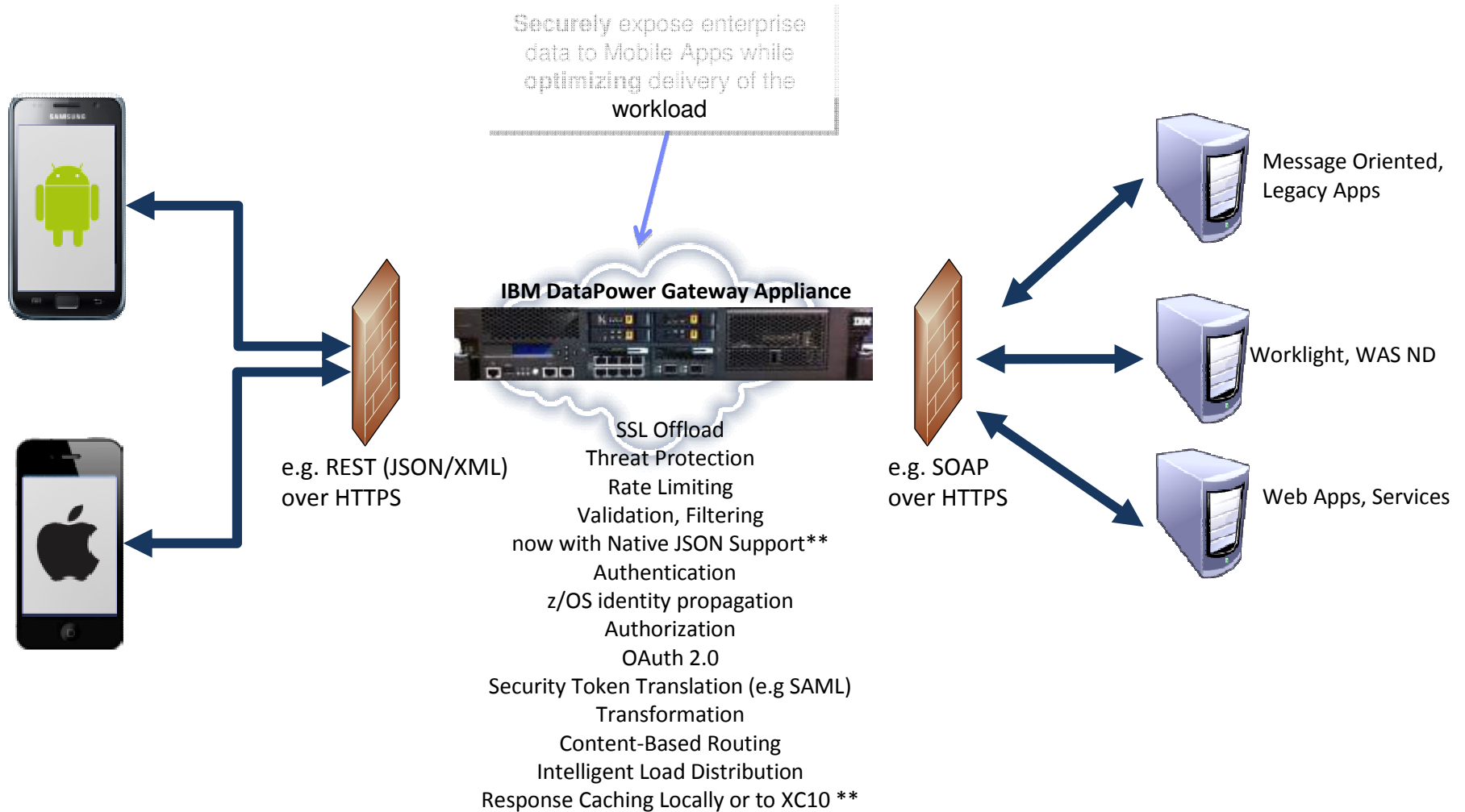
Key Capabilities

- Satisfy complex context-aware authentication requirements
- Reverse proxy, authentication, authorization, and federated identity
- Mobile native, hybrid, and web apps
- Flexibility in authentication: user id/password, basic auth, certificate, or custom
- Supports open standards applicable to mobile such as OAuth
- Advanced Session Management



Connect Mobile Apps with Enterprise Apps & Services

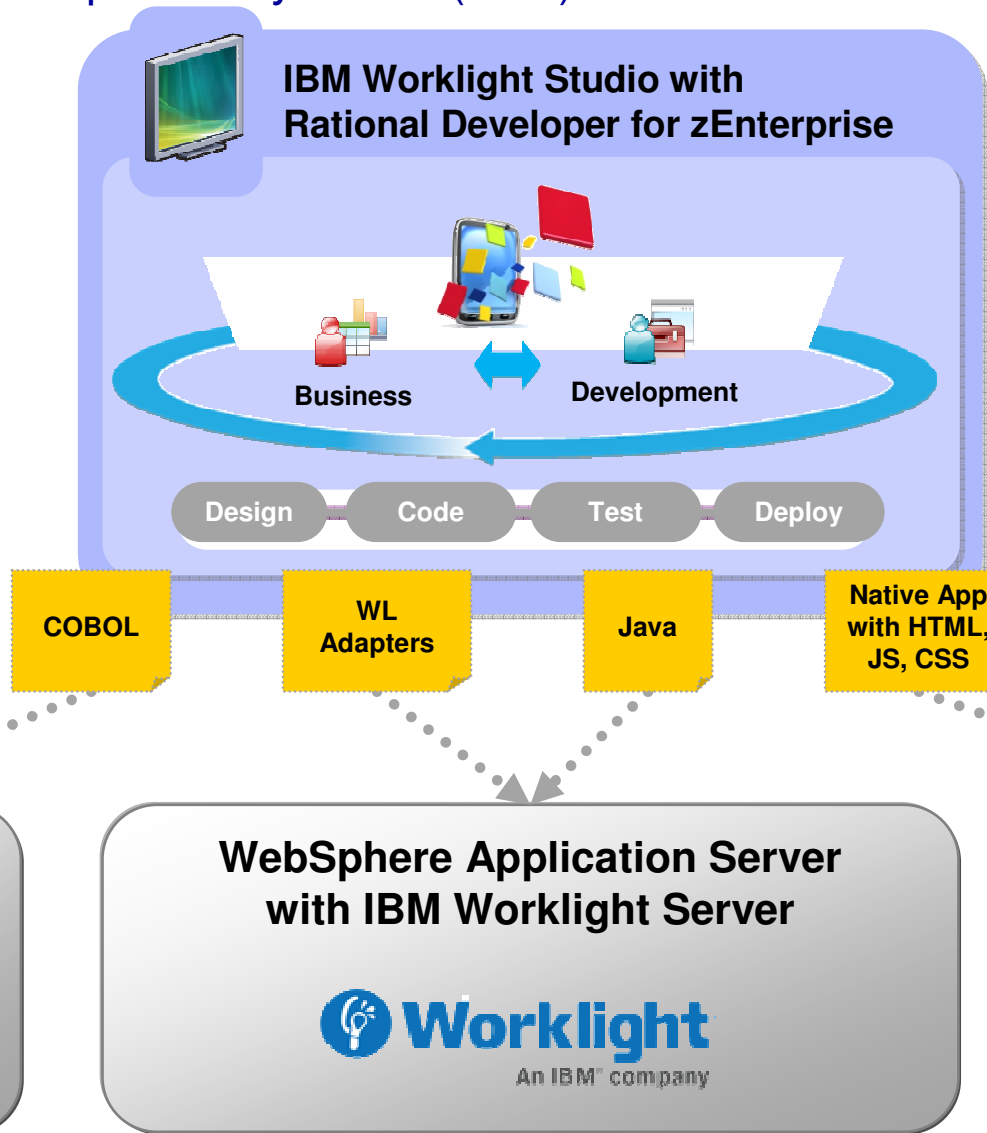
Security, Control, Integration & Optimization of mobile workload



Enhanced form-based authentication support for quick integration with **Worklight applications** running on mobile devices **
Ready-to-use configuration pattern as reverse proxy & security policy enforcement point in front of **Worklight Server****



Development for IBM Worklight on System z with IBM Rational Developer for System z (RDz)

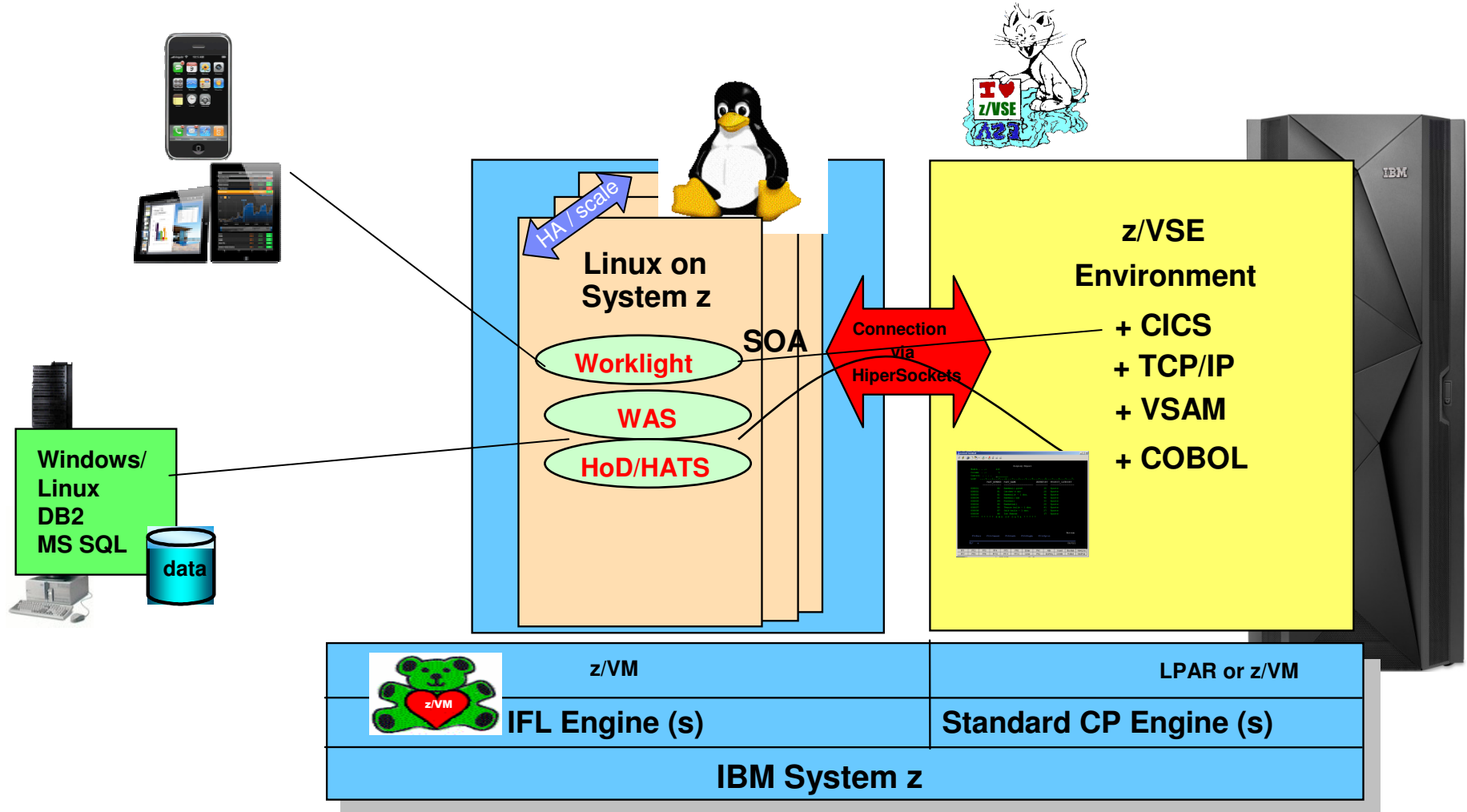


- Built on Eclipse
- Common code base across all mobile platforms (with ability to override at platform level)
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with third-party SDKs (e.g. Android Development Tools)



Mobile computing environment for z/VSE customers

Integrate, simplify, single interface, with Linux as central access point





IBM MobileFirst in Action

http://www.ibm.com/mobilefirst/us/en/see-it-in-action/

IBM Industries & solutions Services Products Support & downloads My IBM Search

IBM MobileFirst

Request a quote
Email IBM

Mobile enterprise Why IBM **See it in action** Offerings Developer resources Conversations

See how your peers achieve measurable results

AIR CANADA enjoys an almost **80%** cost reduction vs traditional check-in

Air Canada offers customers a choice of Web, kiosk or mobile device self-service to check in, and to access services and information

[Watch the video](#)

View case studies by:

All business needs All studies

<p>TRAVEL Air Canada New mobile travel services cut processing transactions 80 percent</p>	<p>INSURANCE American National Insurance Saving time in the field with rapid,</p>	<p>EDUCATION Birmingham Metropolitan College Utilizing social learning to boost</p>	<p>TECHNOLOGY CenterBeam Delivering 98 percent policy compliance across all enterprise devices</p>
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Implementation scenarios for System z Mobile Application functional types

▪ **Mobile Application with asynchronous remote access**

A mobile application that does not have a reliable network connection but needs to interact with an application server. The application should be functional regardless of network connectivity state.

Requirements:

- Security checks for Authentication before the access to Mobile Server
- The communication protocol has to be asynchronous (i.e. MQ or MQTT)
- Local data have to be stored and cached in encrypted format

▪ **Transactional Mobile Application**

A mobile application that has a reliable network connection and interacts with an (transactional) application server.

Requirements:

- Security checks/enforcement for Authentication before the Mobile Server
- Secured protocol has to be used (i.e. HTTPS with JSON or transactional web services)
- Transactional integrity has to be ensured/enforced

▪ **Standalone Mobile Application**

A mobile application that does not require any network connection.

- Is out of scope for a System z implementation (?)



Solution examples (1)

- **Mobile payment**, also referred to as mobile money, mobile [money transfer](#), and mobile wallet generally refer to payment services operated under [financial regulation](#) and performed from or via a [mobile device](#). Instead of paying with cash, check, or credit cards, a consumer can use a mobile phone to pay for a wide range of services and digital or hard goods. Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available.
- Challenge: Avoid fraud, detect abuse on the go in real time
- Possible solution: Use GPS, time related information from last payment and possible picture check via internal features in mobile device or alerts that is requesting a authentication code.



Solution examples (2)

- **Mobile device used for contracts, health actions.**
- In case of an emergency the **health** insurance can use stored data for remote doctors and medicine actions. The data transfer can be done via a Health App.
- Challenge: Avoid abuse – for false diagnosis and respect local laws for data that are not allowed to be transferred to the location where the patient is located.
- Possible solution: Internal, components like GPS can be used to find the location / country and verify law enforcements.
- In case of an **accident** – due to the shaking characteristics and noise registration, the device can start registration so it can give important information for the behavior and initiator of a conflict or accident



Empowered citizens create a smarter Honolulu on a secure Linux cloud on IBM.



IBM System z

Improved citizens services from the cloud are based on:

IBM Products:

- IBM System z[®] servers (z114)
- IBM z/VM[®] for Virtualization of Linux on System z
- IBM Storage (DS8100[®], XIV)
- IBM Maximo[®] Asset Management
- IBM Tivoli[®] Workload Scheduler

Software Partner's Products:

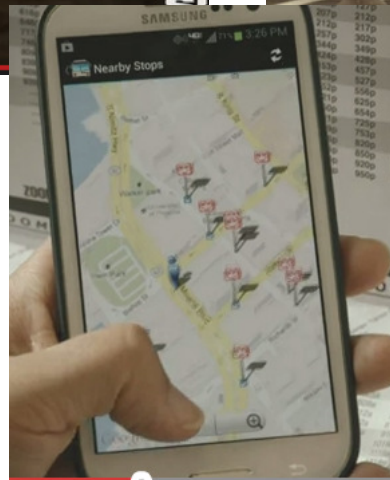
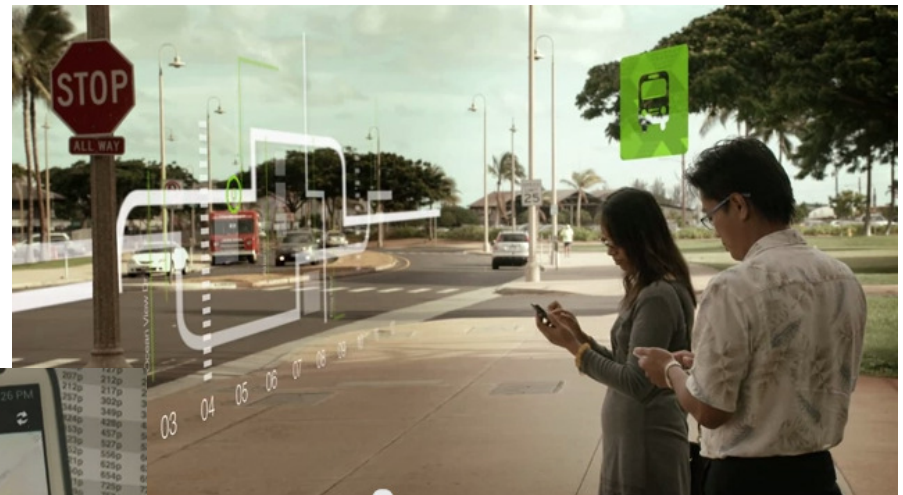
- ESRI ArcGIS
- CitySourced

Sirius Computer Solutions

Leasing through IBM Global Financing

Published on Mar 7, 2013

The City and County of Honolulu created a secure cloud to improve citizen services and enable new applications created by the citizens.



MobileApp 'CitySourced':

- residents report broken street lights, graffiti, and other issues directly through their smart phones (iOS, Android, Blackberry, Windows Phone) to System z IBM Maximo
- reports contain detailed information incl. GPS location and photo

Further MobileApp:

- information +maps on tsunami evacuation zones
- real-time traffic reports
- self-guided walking tours

<http://www.youtube.com/watch?v=hCXLYhaeEwU>

http://www.youtube.com/watch?v=8I9_zWks_yA



RCBC – Mobile Banking with zEnterprise

http://www.youtube.com/watch?v=_qKzw-YeqMY





Summary – z/VSE is enabled for Mobile environments

- **Mobile First** – Mobile devices enable new business opportunities
 - System z sub-systems as well as system management SW are being prepared for mobile access
 - CICS for Mobile Extensions
 - Rational Developer with Worklight Toolkit
 - Business Process Manager

60%

of large companies are making their internal line-of-business applications accessible to workers on smart phones and tablets.

- Mobile Support Server will become a **business critical** application
 - **System z** RAS (Reliability-Availability-Serviceability) capabilities make business sense
 - z/VM Scalability, – management of huge spikes in concurrent mobile access invocations

- Adapter & Integration flexibility for special z/VSE workload
- Security – end-to-end - will become key challenge and differentiator
 - Worklight Server on System z Linux runs where the business data & transactions reside
 - Leverage hipersocket, IEDN (Intra Ensemble Data Network) for back-end system communication
 - Crypto card for SSL off-load



There will be more mobile phones than humans by 2015.

The 2013 Global Technology Outlook



Questions?



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Additional Info

- System z – Meeting the Mobile Challenge: <http://www-01.ibm.com/software/os/systemz/mobility/>
- InfoCenter IBM Worklight: http://pic.dhe.ibm.com/infocenter/wrklight/v5r0m5/index.jsp?topic=%2Fcom.ibm.help.doc%2Fwl_home.html
- University of Florida – Helping students with mobile app based on CICS: http://www-01.ibm.com/software/success/cssdb.nsf/CS/CPAR-8Z8N47?OpenDocument&Site=default&cty=en_us&lc&lc

IBM Software > IBM Software for System z >

Meeting the mobile challenge

IBM Software for System z delivers the security, systems connectivity, and development capabilities to meet tough enterprise mobile requirements





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